CLAIMS

1. A method of determining the authenticity of an object comprising:

   - receiving a first code,
   - determining if the object has a three-dimensional pattern of distributed particles,
   - performing a two-dimensional data acquisition for acquisition of a second code from the object,
   - determining the authenticity using the first and second codes.

2. The method of claim 1, the determination if the object has a three-dimensional pattern of distributed particles being performed by:

   - acquiring a first image of the object with a first angle of illumination,
   - acquiring a second image of the object with a second angle of illumination,
   - combining the first and second images,
   - determining if a geometrical pattern is present in the combined images.

3. The method of claim 1 or 2, wherein the determination if the object has a three-dimensional pattern of distributed particles is made by determining if the object is reflective.

4. The method of claim 3, wherein it is determined whether the objective is reflective by acquiring a first image of the object with diffused illumination and acquiring a second image of the object with direct illumination and comparing a brightness of the object in the first and second images.

5. The method of any one of the preceding claims, the determination if the object has a three-dimensional pattern of distributed particles being performed by:

- illuminating the object with diffused, white light,
- detecting light reflected from the object and light transmitted through the object,
- determining if the reflected light and the transmitted light have complimentary colours.

6. The method of any one of the preceding claims, further comprising:

- acquiring an image of the object in a read position,
- determining a dislocation of the read position with respect to a reference position by detecting of marker positions in the image,
- performing a projective transformation of the image for compensation of the dislocation.

7. The method of any one of the preceding claims, wherein the two-dimensional data acquisition is performed by scanning the object along a predefined two-dimensional grid.

8. The method of any one of the preceding claims, wherein the two-dimensional data acquisition step is performed by acquiring an image of the object.

9. The method of any one of the preceding claims, further comprising filtering of measurement data acquired by the two-dimensional data acquisition in order to provide the second code.

10. The method of claim 9, wherein the filtering involves low pass filtering of the measurement data.

11. The method of claim 9 or 10, the filtering comprising a calculation of mean values of sub-sets of the measurement data.

12. The method of any one of the preceding claims, the first code comprising a set of random vectors and the second code being a data vector.

13. The method of claim 12, the random vectors being pseudo random, each random vector being represented by a running index, and further comprising entering a seed value for a pseudo random number generator in order to generate the random vectors on the basis of the seed value.

14. The method of claim 12 or 13, further comprising determining the signs of scalar products of each one of the random vectors and the data vector for generating a third code.

15. The method of claim 14, the third code being a check code for comparison with an authentication code.

16. The method of claim 14, the third code being a symmetric key.

17. The method of claim 16, the object belonging to a data carrier storing an encrypted file, the method further comprising decrypting the file by means of the symmetric key.

18. The method of claim 17, the first code being stored on the data carrier.

19. A computer program product for performing a method in accordance with any one of the preceding claims.

20. A logic circuit operable to perform a method of any one of the preceding claims .

21. An electronic device for determining the authenticity of an object, the electronic device comprising:

- means for receiving a first code,
- means for determining if the object has a three-dimensional pattern of distributed particles,
- means for performing a two-dimensional data acquisition for acquisition of a second code from the object,
- means for determining the authenticity on the basis of the first and second codes.

22. The electronic device of claim 21, the means for determining if the object has a three-dimensional pattern of distributed particles being adapted to perform the steps of:

- acquiring first image data of the object with a first angle of illumination,
- acquiring a second image of the object with a second angle of illumination,
- combining of the first and second images,
- determining if a geometrical pattern is present in the combined images.

23. The electronic device of claim 21 or 22, the means for determining if the object has a three-dimensional pattern of distributed particles being adapted to determine if the object is reflective.

24. The electronic device of claim 21, 22 or 23, the means for determining if the object has a three-dimensional pattern of distributed particles being adapted to determine whether the object is reflective by acquiring a first image with diffused illumination of the object and acquiring a second image with direct illumination of the object and comparing a brightness of the object in the first and second images.

25. The electronic device of any one of the preceding claims 21 to 24, the means for determining if the object has a three-dimensional pattern of distributed particles being adapted to perform the steps of:

- illuminating the object with diffused, white light,
- detecting light reflected from the object and light transmitted through the object,
- determining if the reflected light and the transmitted light have complimentary colours.

26. The electronic device of any one of the preceding claims 21 to 25, further comprising means for performing a projective transformation in order to compensate a dislocation of the object with respect to a reference position.

27. A method for providing the first code for use in an authentication method, the method comprising:

- providing a third code,
- acquiring a data vector from an object representing a second code,
- determining a random vector for each one of the bits of the third code on the basis of the second code to provide the first code.

28. The method of claim 27, wherein the object is an image.

29. The method of claim 28, further comprising scanning the image in order to obtain image data and filtering the image data to provide the data vector.

30. The method of claim 29, the filtering of the image data comprising a calculation of mean values of sub-sets of the image data.

31. The method of claim 30, the sub-sets of the image data being determined by a predefined grid.

32. The method of any one of the preceding claims 27 to 31, the third code being a key.

33. A computer program product for performing a method of any one of the preceding claims 27 to 32.

34. A logic circuit operable to perform a method of any one of the preceding claims 27 to 32.

35. An electronic device operable to perform a method of any one of the preceding claims 27 to 32.

36. An apparatus for determining the authenticity of an object comprising:

- a reader for reading a first code,
- an optical component for determining if the object has a three-dimensional pattern of distributed particles,
- a measurement component for performing a two-dimensional data acquisition for acquisition of a second code from the object,
- a microprocessor for determining the authenticity on the basis of the first and second codes.

37. A reader for a data carrier, the data carrier having an object, the reader comprising:

- a receiver for receiving a first code,
- an optical component for determining if the object has a three-dimensional pattern of distributed particles,

- a measurement component for performing a two-dimensional data acquisition step for acquisition of a second code from the object,

- a microprocessor for determining the authenticity of the data carrier on the basis of the first and second codes.

38. The reader of claim 37, the microprocessor being programmed to provide a third code on the basis of the first and second codes for decryption of mass data stored on the data carrier.

39. An electronic device for determining the authenticity of an object, the electronic device comprising:

- an interface for entering a first code,

- an apparatus for determining if the object has a three-dimensional pattern of distributed particles and for performing a two-dimensional data acquisition for acquisition of a second code from the object,

- a processor for determining the authenticity on the basis of the first and second codes.

40. The electronic device of claim 39, the apparatus operable to determine if the object is reflective.

41. The electronic device of claim 39 or 40, further comprising a filter for filtering measurement data acquired by the two-dimensional data acquisition in order to provide the second code.

42. The electronic device of claim 39, 40 or 41, the first code comprising a set of random vectors and the second code being a data vector, the random vectors being pseudo random, and further comprising a pseudo random number generator to generate the random vectors on the basis of a seed value.

43. The electronic device of claim 42, the processor operable to determine the signs of scalar products of each one of the random vectors and the data vector for generating a third code.

44. The electronic device of claim 43, the third code being a check code for comparison with an authentication code.

45. The electronic device of claim 43, the third code being a symmetric key.